SECTION II. C

WASTE ANALYSIS PLAN

WASTE ANALYSIS PLAN

Michigan Public Act 451 Rules R 299.9504(i)(c), R 299.9508, and R 299.9605(i) and 40 Code of Federal Regulations (CFR) 270.14(b)(3) and 264.13(b) and (c), which are adopted by reference (ABR) in R 299.11003, establish requirements for Waste Analysis Plans (WAPs) for hazardous waste management facilities. This section addresses requirements for a WAP for the hazardous waste management units and the hazardous waste management facility for The Dow Chemical Company (Dow) Michigan Operations Midland Plant (MID 000 724 724) and Salzburg Landfill (MID 980 617 435) facilities. These two facilities will be collectively referred to within the WAP as Michigan Operations. All activities associated with the WAP will be conducted by qualified personnel for Dow's Michigan Operations Midland, Michigan facility.

This section is organized as follows:

A. CAPTIVE FACILITY ACCEPTING OFF-SITE WASTE

Dow's Michigan Operations is a captive facility that receives wastes generated off site from other Dow sites (e.g., Texas, West Virginia) and Dow subsidiaries (e.g., Dow Corning). The off-site waste locations can and will change over time. Dow also manages small quantities of waste as a "public service" (e.g., household hazardous waste, waste from local educational and not-for-profit institutions). These services are provided at no charge.

Dow's Michigan Operations generates waste on site.

Dow's Michigan Operations has developed a WAP to ensure that its facility at Midland, Michigan will accept only wastes that it is authorized to accept. The hazardous wastes stored, treated and disposed of at Dow's Michigan Operations will be properly characterized prior to waste acceptance. All generators will be required to provide a complete waste characterization, including chemical analysis when appropriate. Waste screening will be conducted on every shipment of waste to ensure that the waste conforms to the waste profile for the generator and information on incoming manifests and to ensure that the waste is properly managed within the facility.

All analyses performed pursuant to this application will be consistent with the quality assurance and quality control (QA/QC) plan included in this WAP. All samples for the purpose of waste characterization will be collected, transported, stored, and disposed of by trained and qualified individuals in accordance with the QA/QC plan. For a more detailed description of the quality assurance process, refer to the Dow Chemical Michigan Operations License Reapplication (Appendix C of the Sampling and Analysis Plan which is Appendix E of Section V, Environmental Monitoring) and the Salzburg Landfill Operating License Reapplication (Section V., Environmental Monitoring, Appendix A, Sampling and Analysis Plan).

In accordance with R 299.9609 and 40 CFR 264.73 and 264, Appendix I, which are ABR in R 299.11003, Dow's Michigan Operations will retain all records and results of waste determinations performed as specified in 40 CFR 264.13, 264.17, 264.314, 264.1034, 264.1063, 264.1083, 268.4(a) and 268.7 in the facility operating record until closure of the facility.

A(1) Initial Waste Characterization Requirements for Generators

{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(b)(5) which is ABR in R 299.11003}

Dow's Michigan Operations will require the following waste profile information for initial waste shipments from all generators prior to waste acceptance.

See Figure II.C-1 Example Generator Waste Characterization Form (GWCF).

The GWCF has specific sections that address generator identification, the type of transport container, the chemical composition, the regulatory status of the waste, physical properties, process knowledge reference, data analysis, reactive chemicals properties, exposure hazards, and cleanup procedures, etc.

The GWCF is completed and evaluated using a computer based waste characterization system. This system enables computer-based input, evaluation, archiving and use of waste characterization data. A printable version of the GWCF can be obtained from the system. All references to the GWCF within this WAP refer to the form and/or the computer based waste characterization system.

Figure II.C-2 is a logic diagram that a generator can follow in order to determine the proper treatment and disposal of hazardous wastes. The steps include the characterization of a waste initially, the selection of a method of disposal, an assessment of the disposal method, internal tracking procedures and finally treatment. If information is lacking in the GWCF, the process of characterization is repeated.

A(1)(a) Generator Waste Characterization Discrepancies
{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(a)(3) and (4), 264.13(b) and (c), and 264.72 which are ABR in R 299.11003}

Prior to acceptance of the waste for management at the Michigan Operations site, sufficient information is obtained from the waste generator to enable qualified personnel to determine the suitable treatment or disposal method. This information is collected by use of the GWCF. Information is collected to determine if the waste is characteristically hazardous (ignitable, corrosive, reactive, or toxic), or if it meets the definition of one of the RCRA listed hazardous wastes (F, K, P, and U lists). Information is also collected to determine if the waste is hazardous as defined under Part 111 of Michigan Act 451 (toxic or Michigan K, S and U lists).

Regulatory compliance, personnel exposure, environmental impact, technical data, and material handling concerns are reviewed on the basis of available information. After a review by qualified waste characterization reviewers (and if necessary, by other appropriate resources such as Industrial Hygiene, Safety, Emergency Response, Product Technical Centers, and Dow's reactive chemical experts), information on waste preparation, proper handling, packaging, and other requirements is conveyed to the waste generator. Only wastes meeting Environmental Operations' requirements will be accepted (see the GWCF and Figure II.C-2).

The type of information requested will depend upon the preliminary waste management mode proposed. If sufficient data exists in the GWCF to ensure the appropriate treatment or disposal procedures can be implemented safely, additional analyses will not be performed. In cases where insufficient data is submitted by a waste generator, the generator will be notified and required to provide additional data

and/or analysis of the waste. Analyses performed will follow Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) or equivalent methods. The most recent approved version of SW-846 will be used when applicable.

A(1)(b) Waste Profile Review Frequency

{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(a)(3) and 264.13(b)(4) which are ABR in R 299.11003}

All waste characterizations are reviewed and updated by the generator on a specified frequency depending on the unit receiving the waste (see table below). Additionally, a re-characterization and/or analysis will occur whenever a process modification has resulted in a waste change that is significant enough to affect its regulatory status or handling characteristics. A new waste characterization form may need to be filled out if off-site waste arriving at the facility is suitable for treatment at the facility but does not match the accompanying manifest or shipping paper.

Unit	Review Frequency
Landfill	Annual
Waste Water Treatment Plant Influent	Every two years
Tertiary Treatment Pond Influent	Annual
Incineration	Every three years (on-site streams) Annual (off-site streams)

A(1)(c) Additional Waste Analysis Requirements

{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(b)(6) and 40 CFR 264.13(c)(3) which are ABR in R 299.11003}

Dow's Michigan Operations will ensure that qualified personnel review the waste profile information to ensure that the facility is authorized to receive the waste, and can manage the waste in compliance with the following:

☒	R 299.9605 and 40 CFR 264.17	General requirements for ignitable, reactive, or incompatible wastes (not accepted at Salzburg Landfill, unless the waste meets treatment standards) [See the appropriate Preventative Procedures section]
☒	R 299.9631 and 40 CFR 264.1063(d)	Test methods and procedures (Subpart BB)

☒	40 CFR 264.1083	Waste determination procedures (Subpart CC)
☒	R 299.9627 and 40 CFR 268.7	Waste analysis and record keeping (LDR) requirements [See Waste Analysis Plan, Appendix II.C-2]
☒	R 299.9503 (1) (h) and 40 CFR 264.13 (c) (3)	Procedures to verify that no addition of biodegradable sorbents in containers destined to be landfilled has occurred.

A(2) Waste Acceptance Procedures

{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(c), 264.72(a) and (b), and 264.73(b) which are ABR in R 299.11003}

Waste shipments arrive at the facilities in the following containers:

☒	Drums	☒	Portable tanks (dinos, dempsters)*
☒	Totes*	☒	Dump trucks
☒	Roll-off boxes	☒	Vacuum trucks
☒	Tanker trucks*	☒	Railroad cars*
☒	Lab packs*	☒	Gas cylinders*

*Salzburg Landfill does not accept waste in / from these containers, since these typically contain liquid or contained-gas wastes. However, in the rare event that a container itself is deemed a waste, that container may be placed into Salzburg Landfill subject to applicable regulations and license requirements.

Upon receipt of wastes from an off-site generator, Dow's Michigan Operations will ensure qualified personnel will perform all of the following tasks:

- Review paperwork
- Visually inspect the waste
- Perform waste screening / fingerprint analysis of waste

These tasks are discussed below.

A(2)(a) Review Paperwork

{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(c), 264.72(a) and,(b), and 264.73(b) which are ABR in R 299.11003}

Dow's Michigan Operations will ensure that qualified personnel review all paperwork, including manifests and LDR notifications, before any wastes are accepted by the facility. Dow's Michigan Operations will ensure qualified personnel will review all paperwork for completeness. In addition, the LDR notification and manifest will be compared for consistency. The manifest will also be compared to the waste profile and any analytical information that may be provided by the generator and to the waste shipment itself to ensure the accuracy of information provided on shipment paperwork. The manifest will also be compared to the number of containers, the volume, and/or the weight of the waste in the shipment. All discrepancies will be resolved before processing the waste.

A(2)(b) Visual Inspection of the Waste

{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(c) which are ABR in R 299.11003}

Dow's Michigan Operations procedures ensure qualified personnel visually inspect containers from each generator for the condition of the containers and proper labeling (including bar codes for waste in packs). All discrepancies will be resolved before processing the waste.

A(2)(c) Waste Screening/Fingerprinting

{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(b)(1-4) and 264.13(c)(2), which are ABR in R 299.11003}

For off-site approved wastes that can be mixed with wastes at the facility, quality acceptance testing may be appropriate. These may be physical or analytical tests such as pH, color, specific gravity, or visual appearance. The sampling method will be an appropriate method described in 40 CFR 261, Appendix I which is ABR in R 299.11033. If deemed necessary, the specifics of such procedures are defined with the assistance of the generator prior to shipment. As with wastes generated on-site, these wastes will be evaluated for compatibility prior to being co-managed with other wastes.

In the event that sampling at the time of arrival indicates that the shipment is not the same as was previously characterized, then the waste is isolated and contained and the generator is contacted. The material will be re-characterized and re-approved prior to acceptance, or the shipment is rejected and returned to the generator. Waste accumulation periods for generators are managed within the requirements of 40 CFR 262.34.

During the waste characterization approval process, the qualified reviewer will evaluate waste that could go to the Landfill for non-biodegradable absorbents prior to final approval of the waste characterization. This would normally be the Environmental Management Unit approver. The generator will indicate on the GWCF, types of absorbent to be used for each waste. The following absorbents are approved for use on wastes disposed at Salzburg Landfill: Zorball®, sand, spun polypropylene, clay, vermiculite, and other non-biodegradable absorbents as defined in 40 CFR 264.314(d).

Salzburg Landfill does not accept wastes containing free liquids. Wastes will be visually screened for free liquids prior to landfilling.

A(3) Procedures to Ensure Compliance with Land Disposal Restrictions (LDR) Requirements

{R299.9627 and 40 CFR Part 268 which is ABR in R 299.11003}

All shipments of wastes subject to LDR received at the facility will be accompanied by appropriate generator notification and LDR notification in accordance with R 299.9627 and 40 CFR 268.7 which is ABR in R 299.11003. The LDR notification accompanying generator wastes will be reviewed, and any discrepancies in the LDR notification and the associated manifest, analytical records, or waste profile sheet will require shipment rejection unless additional satisfactory clarifying information is provided by the generator. All information obtained to document LDR compliance will be maintained in the facility operating record until closure of the facility.

In accordance with the LDR regulations, all wastes shipped off site will be analyzed, or generator knowledge will be used, when appropriate, to determine whether the waste meets the applicable LDR treatment standards specified in R 299.9627 and 40 CFR 268.41-43 which are ABR in R 299.11003. All analytical results will be maintained in the facility operating record until closure of the facility. Wastes that are determined through analysis to meet treatment standards as specified in R 299.9627 and 40 CFR 268.41-43 which are ABR in R 299.11003 will be landfilled.

Dow's Michigan Operations will supply LDR notifications and certification, including appropriate analytical records to support the certification, to the receiving facility with each off site shipment of waste. The notifications and certifications will contain the information required under R 299.9627 and 40 CFR 268.7, which is ABR in R 299.11003. Any additional data obtained from the generators (e.g., waste profile sheets, original LDR notifications, analysis provided by generators) will be provided to the licensed TSDF where the waste will be sent.

Dow has obtained in the past and may obtain future variances from LDR requirements per 40 CFR 268.6. Where variances exist, disposal of the solids will meet the approved variance requirements.

A(3)(a) Spent Solvent and Dioxin Wastes

{R 299.9627 and 40 CFR 264.13(a)(1), 268.7, 268.31, 268.40, 268.41, 268.42, and 268.43 which are ABR in R 299.11003}

Spent solvent wastes (F001-F005) are accepted at the facility. Generator process knowledge will be used to determine the presence of spent solvent wastes (F001-F005). Generator process knowledge will be documented on the GWCF and LDR notification. The LDR notification will provide additional information regarding the appropriate treatment standards for the waste and whether it has already been treated to the appropriate standards.

A(3)(b) Listed Wastes

{R 299.9627, R 299.9213, and R299.9214, and 40 CFR 264.13(a)(1), 268.7, 268.39, 268.40, 268.41, 268.42, 268.43 which are ABR in R 299.11003}

Generator process knowledge will be used to determine whether listed waste meets the applicable treatment standards or demonstrate that the waste has been treated by the appropriate specified treatment technology. In accordance with R 299.9627 and 40 CFR 268.41, which ABR is in R 299.11003, where treatment standards are based on concentrations in the waste extract, the facility will use toxicity characteristic leaching procedures (TCLP) to determine if wastes meet treatment standards. Generator process knowledge will be documented on the GWCF and LDR notification.

A(3)(c) Characteristic Wastes

{R 299.9627, R 299.9208, and R 299.9212 and 40 CFR 261.3(d)(1), 264.13(a)(1), 264.312, 268.7, 268.9, 268.34, 268.37, 268.40, 268.41, 268.42, 268.43 and Part 268 Appendix I, and Appendix IX which are ABR in R 299.11003}

Generator process knowledge will be used to determine whether characteristic wastes meet the applicable treatment standards or to demonstrate that the waste has been treated by the appropriate specified treatment technology. In accordance with R 299.9627 and 40 CFR 268.41 which is ABR in R 299.11003, where treatment standards are based on concentrations in the waste extract, generators shipping waste to the facility will determine if their wastes meet treatment standards.

If laboratory analysis is necessary, characteristic D008 lead non-wastewaters and D004 arsenic non-wastewaters will be analyzed using TCLP to determine compliance with treatment standards of 40 CFR 268.40 and 268.48. If after treatment a hazardous waste displays a characteristic for the first time, the characteristic waste code will be added to

the LDR notification and facility records. Wastes will be re-treated, as appropriate, to meet the characteristic treatment standards of 40 CFR 268.40 and 268.48 prior to land disposal. In addition, generator process knowledge will be used to identify the underlying hazardous constituents that are expected to be present in the waste. Generator process knowledge will be documented on the GWCF and LDR notification.

A(3)(d) Radioactive Mixed Waste

{R 299.9627 and 40 CFR 268.7, 268.35(c), 268.36, and 268.42(d) which are ABR in R 299.11003}

☒ Generator process knowledge will be used to determine whether a radioactive mixed waste meets the applicable treatment standard. Radioactive mixed waste is characterized using the same process as all other waste. Michigan Operations has a license from the Nuclear Regulatory Commission for treatment of the radioactive materials handled on the site.

*Salzburg Landfill does not accept radioactive waste for disposal, but it does receive treatment residues from the Michigan Operations incineration complex.

A(3)(e) Leachates

{R 299.9627 and 40 CFR 260.10 and 40 CFR 268.35(a) and 268.40 which is ABR in R 299.11003}

Dow's Michigan Operations F039 multi-source leachate is treated in its waste water treatment plant. The secondary effluent from the waste water treatment plant is checked annually to confirm that it meets LDR treatment standards. Based on the F039 constituents in the wastes treated the prior year according to completed GWCFs, a selected list of constituents is monitored. A list of analytes for prior years is available upon request.

For example, in 2006, the following chemicals were tested under the F039 code. The list is merely an example and will change from year to year depending on the wastes treated during the previous calendar year.

Acenaphthylene
Acenaphthene
Acetone
Acetonitrile
Acetophenone
Acrylonitrile
Aniline
Anthracene
Benzene
Benz(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(g,h,i)perylene
Benzo(a)pyrene
4-Bromophenyl phenyl ether
n-Butyl alcohol
Butyl benzyl phthalate
2-sec-Butyl-4,6 dinitrophenol
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
2-Chloro-1,3-butadiene
Chlorodibromomethane
Chloroethane
Bis (2-Chloro-ethoxy)methane
2-Chloronaphthalene
2-Chlorophenol
3-Chloropropylene
o-Cresol
m-Cresol
Cyclohexanone
1,2-Dibromoethane
Dibromomethane
2,4-Dichlorophenoxyacetic acid (2,4-D)
Dibenz(a,h)anthracene
m-Dichlorobenzene
o-Dichlorobenzene
p-Dichlorobenzene
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethylene
2,4-Dichlorophenol
2,6-Dichlorophenol
1,2-Dichloropropane
Diethyl phthalate
Dimethyl phthalate
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
1,4-Dioxane
Diphenylnitrosamine
Ethyl acetate
Ethyl benzene
Ethyl ether
Ethylene oxide
Bis(2-ethylhexyl) phthalate
Fluoranthene
Fluorene
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
1,2,3,4,6,7,8-Heptachlorodibenzo-p-furan
1,2,3,4,7,8,9-Heptachlorodibenzo-p-furan
Hexachlorobenzene
Hexachlorobutadiene
Hexachloroethane
Hexachlorocyclopentadiene
Hexachlorodibenzo-p-dioxins
Hexachlorodibenzo-furans
Hexachloroethane
Indeno (1,2,3-c,d) pyrene
Iodomethane
1,3-Isobenzofurandione
Methacrylonitrile
Methylene chloride
Methyl ethyl ketone
Methyl isobutyl ketone
Methyl methacrylate
Methyl methansulfonate
Naphthalene
Nitrobenzene
p-Nitrophenol
Pentachlorobenzene
Pentachlorophenol
Phenol
Phthalic anhydride
Pyrene
Pyridine
Silvex (2,4,5-TP)
1,2,4,5-Tetrachlorobenzene
Tetrachlorodibenzo-p-dioxins
Tetrachlorodibenzofurans
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene
2,3,4,6-Tetrachlorophenol
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene
1,1,2-Trichloro-1,2,2-trifluoroethane
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
Vinyl chloride
Xylene(s)
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Lead
Nickel
Mercury
Selenium

Silver

Zinc

A(3)(f) Laboratory Packs

{R 299.9627 and 40 CFR 268.7, 268.42(c), and Part 268 Appendix IV and Appendix V which are ABR in R 299.11003}

☒ The laboratory packs accepted at the facility are not land disposed.

Laboratory packs are treated by incineration and the incinerator ash is tested annually to verify that it meets LDR treatment standards.

If a lab pack hazardous waste is combined with non-lab pack hazardous waste prior to or during treatment, the entire mixture will be treated to meet the most stringent treatment standards for each waste constituent before being land disposed.

A(3)(g) Contaminated Debris

{R 299.9627 and 40 CFR 268.2(g), 268.7, 268.9, 268.36, 268.45, and 270.13(n) which are ABR in R 299.11003}

☒ The hazardous debris categories and the contaminant categories associated with the types of hazardous debris accepted at the facility are presented in Table A-3.

Hazardous debris accepted at the facility that exhibits the characteristics of ignitability, corrosivity, or reactivity will be treated using one of the extraction, destruction, or immobilization technologies identified in Table 1 of 40 CFR 268.45.

A(3)(h) Waste Mixtures and Wastes with Overlapping Requirements

{R 299.9627 and 40 CFR 264.13(a), 268.7, 268.41, 268.43, and 268.45(a) which are ABR in R 299.11003}

Generator process information and analytical data will be used to demonstrate that those waste mixtures and wastes with multiple codes are properly characterized. Each waste that has more than one characteristic will be identified with a number for each characteristic. Waste identified as meeting a listing and exhibiting a characteristic will be primarily identified with the listed waste code for the purpose of manifesting, etc. Wastes that carry more than one characteristic or listed waste code are treated by the appropriate treatment standard for each waste code as required by 40 CFR 268.

A(3)(i) Dilution and Aggregation of Wastes

Listed wastes, if destined for land disposal, may not be diluted from the point of generation to the point of land disposal. Characteristic wastes may only be diluted if (1) the waste is managed in a Clean Water Act (CWA)/CWA-equivalent surface unit, (2) the waste has a concentration-based treatment standard or is treated using the deactivation (DEACT) technology-based treatment standard, and (3) the waste is not a

D003 reactive waste. The facility may not dilute or partially treat a listed waste to change its treatability category (i.e., from non-wastewater to wastewater), in order to comply with different treatment standards. If the wastes are all legitimately amenable to the same type of treatment to be performed, the facility may aggregate wastes for treatment.

A(4) Comparable Fuels

{R 299.9230, 40 CFR 261.4(a)(16) and 40 CFR 261.38}

In ongoing efforts to reduce the natural gas consumption of Dow's 32 Incinerator, the facility may receive streams that qualify for the Comparable Fuels exclusion from regulation as hazardous waste pursuant to the provisions contained in R 299.9230 (40 CFR 261.4(a)(16) and the Permit to Install No. 281-07, approved on April 16, 2008.

Documentation required under 40 CFR 261.38 supporting any comparable fuel incinerated under this section will be maintained by Dow as part of the operating record.

TABLE A-3

CONTAMINATED DEBRIS CATEGORIES

Hazardous Debris Category	Contaminant Category
Glass: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Metal: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Plastic: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Rubber: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Brick: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Cloth: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Concrete: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Paper: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Asphalt: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Rock: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Wood: Yes	Toxicity characteristic waste, or debris contaminated with listed waste

The waste characterization process used for all other waste will be used to characterize the hazardous debris managed at the facility. These procedures ensure hazardous debris is treated in accordance with treatment standards specified in R 299.9627 and 40 CFR 268.45 which is ABR in R 299.11003, or to meet the existing treatment standards for each waste constituent specified in R 299.9627 and 40 CFR 268.41 and 268.43 which are ABR in R 299.11003 (except wastes with a specified

treatment technology listed in R 299.9627 and 40 CFR 268.42 which is ABR in R 299.11003, which must be treated as required in R 299.9627 and 40 CFR 268.42 which is ABR in R 299.11003).

B. NOTIFICATION, CERTIFICATION, AND RECORDKEEPING REQUIREMENTS

{R 299.9627 and R 299.9609 and 40 CFR 264.73, 268.7, 268.9(d) which are ABR in R 299.11003}

Appendix II.C-2 to the WAP describes Dow's Michigan Operations' procedures for preparing and/or maintaining applicable notifications and certifications to comply with LDRs.

B(1) Retention of Generator Notices and Certifications

{R 299.9627 and 40 CFR 268.7(a)(7) which is ABR in R 299.11003}

Dow's Michigan Operations will retain a copy of all notices, certifications, demonstrations, data, and other documentation associated with compliance to LDRs in the operating record until closure of the facility.

The following notices and certifications submitted by the initial generator of the waste will be reviewed and maintained:

- Notices of restricted wastes not meeting treatment standards or exceeding levels specified in RCRA Section 3004(d), including the information listed in R 299.9627 and 40 CFR 268.7(a)(1), which is ABR in R 299.11003.

- Certifications of restricted wastes meeting applicable treatment standards and prohibition levels, including the information in R 299.9627 and 40 CFR 268.7(a)(2), which is ABR in R 299.11003.

B(2) Notification and Certification Requirements for Treatment Facilities

{R 299.9627 and 40 CFR 268.7(b) which is ABR in R 299.11003}

The treatment facility will submit a one-time notice and certification to the land disposal facility with each shipment of restricted waste or treatment residue of a restricted waste as specified in 40 CFR 268.7(b)(3). The notice will include the information specified in R 299.9627, 40 CFR 268.7(b)(4) and 268.7(b)(5), that is ABR in R 299.11003.

If the waste or treatment residue will be further managed at a different treatment or storage facility, the facility will comply with the notice and certification requirements applicable to generators as specified in R 299.9627 and 40 CFR 268.7(b)(6), which is ABR in R 299.11003.

B(3) Waste Shipped to Subtitle C Facilities

{R 299.9627 and 40 CFR 268.7(a) and 268.7(b)(5) which are ABR in 299.11003}

☒ For restricted waste or waste treatment residues that will be further managed at a Subtitle C (hazardous waste management) facility, the facility will submit

notifications and certifications in compliance with the requirements applicable to generators under R 299.9627 and 40 CFR 268.7(a), which is ABR in R 299.11003. Each shipment of waste to be transported off site to a RCRA-authorized Subtitle C TSDF will include a written notification and certification that the waste either meets or does not meet applicable treatment standards of prohibition levels.

B(5) Waste Shipped to Subtitle D Facilities

{R 299.9627 and 40 CFR 268.7(d) and 268.9(d) which are ABR in 299.11003}

☒ If the facility ships hazardous debris or characteristic waste to a Subtitle D facility, the facility will submit a one-time notification and certification for characteristic wastes (or listed wastes that are listed only because they exhibit a characteristic) that have been treated to remove the hazardous characteristic and are no longer considered hazardous. The facility will place a certification and all treatment records in the facility's file and send a notification and certification to the Director (or delegated representative) describing the wastes and applicable treatment standards and identifying the Subtitle D (solid waste management) disposal facility receiving the waste. On an annual basis, the notification and certification will be updated if the process or operation generating the waste changes and / or if the Subtitle D facility receiving the waste changes.

B(6) Recyclable Materials

{R 299.9627 and 40 CFR 268.7(b)(6) which is ABR in 299.11003}

☒ The facility does not accept recyclable materials used in a manner constituting disposal.

B(7) Recordkeeping

{R 299.9608(4), R 299.9609, R 299.9610(3), and R 299.9627 and 40 CFR 264.72, 264.73, 268.7(a)(5), 268.7(a)(6), 268(a)(7), and 268.7(d) which are ABR in R 299.11003}

Dow's Michigan Operations maintains a facility operating log in accordance with R 299.9609 and 40 CFR 264.73.

Copies of all necessary notifications and certifications as well as relevant inspection forms and monitoring data are also maintained on file at the facility. Files will be maintained for a minimum of three (3) years (for inspection records and LDR notification), or until facility closure (for inventory records).

If a significant manifest discrepancy is discovered (such as variation in one piece count or misrepresentation of the type of waste such as corrosive rather than flammable) that cannot be resolved with the generator or transporter within 15 days of receipt, facility personnel will submit to the Director and regional administrator a letter describing the

discrepancy and all attempts to reconcile the discrepancy. The letter will include a copy of the discrepant manifest or shipping document.

In the event that the facility manages a prohibited waste that is excluded from the definition of a hazardous or solid waste or that is exempt from Subtitle C regulations under 40 CFR 261.2 through 261.6 subsequent to the point of generation (including deactivated characteristic hazardous wastes managed in wastewater treatment systems subject to the Clean Water Act as specified at 40 CFR 261.4(a)(2) or that are CWA-equivalent), the facility will place a one-time notice in the facility files describing the generation, basis for exclusion or exemption, and disposal of the waste. For each shipment of treated debris, the facility will place a certification of compliance with applicable treatment standards in the facility's files.

WASTE ANALYSIS PLAN - APPENDIX II.C-1

QUALITY ASSURANCE / QUALITY CONTROL PROCEDURES

Quality Assurance / Quality Control Procedures

Analyses performed will follow Test Methods for Evaluating Solid Waste, Physical / Chemical Methods (SW-846) or equivalent methods. The most recent approved version of SW-846 will be used when applicable. The appropriate quality assurance / quality control procedures as specified in the SW-846 methods will be followed. The quality assurance process is designed to insure that the information and data is technically sound, statistically valid, and properly documented. The quality assurance process provides the highest quality data possible or needed, within the constraints of the existing methods, sample matrix, and informational needs. The amount of quality assurance review that is needed may vary depending on the complexity of analyses required for the waste management method or regulatory program.

The quality control procedures are used to estimate and evaluate the reliability of the analytical data and to determine the necessity or the effect of corrective action on sampling, storage, shipping and analytical procedures. Inaccuracies can result from many causes, including unanticipated matrix effects, equipment malfunctions, and operator error. These factors are minimized through the use of quality control procedures by means of precision, accuracy, method detection limit studies, recovery determination, and other quantifiable and qualitative indicators.

For a more detailed description of the Quality Assurance Program (QAP) refer to the Dow Chemical Michigan Operations License Reapplication (Appendix C of the Sampling and Analysis Plan which is Appendix E of Section V, Environmental Monitoring) or the Salzburg Landfill license application (Section V, Appendix A, Attachment C).

WASTE ANALYSIS PLAN - APPENDIX II.C-2

LAND DISPOSAL RESTRICTIONS

Land Disposal Restrictions

R 299.9627, 40 CFR 270.14(b)(3), 40 CFR 268.7(b)

The purpose of this section is to define how the regulated facilities at Dow's Michigan Operations will comply with the requirements of R 299.9627 [40 CFR 268].

Generators

All generators (both on-site and off-site) must submit a completed Generator's Waste Characterization Form (GWCF) to the appropriate Environmental Operations personnel for approval before any waste will be accepted for treatment, storage, or disposal at any of the regulated units covered by this reapplication. This submittal and the approval procedure are explained in Section II. B—Chemical and Physical Analyses, of this reapplication. The GWCF incorporates the Land Disposal Restriction (LDR) notifications and certification as required by R 299.9627 [40 CFR 268.7] for generators submitting wastes for treatment, storage, or disposal. Therefore, it is assured that all generators will submit the required LDR paperwork.

The generator submits the appropriate LDR documentation as part of the GWCF for the waste stream to be treated, stored, or disposed in the regulated units. The LDR notifications and any required certifications are maintained in the operating log of the owner/operator of the unit until closure of the unit as required by R 299.9609 [40 CFR 264.73(b)(11-14)].

For off-site shipments, a copy of the LDR notification and any required certification must accompany the first shipment of waste to the treatment, storage, or disposal facility. The associated manifest number must be included on the LDR with the first shipment of waste to the regulated unit.

Annual LDR Certification Sampling and Analysis

The sampling and analysis program is coordinated between the Incinerator, the ash dewatering-staging area, and the WWTP personnel. The program involves a certification burn in which representative wastes managed by the units are burned during a single campaign to generate residues for analyses. Scrubber water is not analyzed directly for LDR constituents because it is sent to the WWTP for treatment, not to land disposal. The importance of scrubber water as a waste stream is that, due to the derived-from rule, it contributes many of the hazardous waste codes for which the WWTP certifies in their secondary effluent.

Selection of Wastes for Annual Certification Burn

Waste codes associated with waste streams incinerated in excess of 250,000 pounds during the previous calendar year are codes that are burned for the LDR Certification Burn. The quantity of 250,000 pounds was determined from the historical EPA HSWA permit of October 1988. In the past, for purposes of the LDR program, the year was based on the date of issuance of the historical HSWA permit for the facility. The year is currently based on a calendar year.

Sampling Techniques and Locations

Incinerator Ash

The primary sampling location for Incinerator ash is in the ash dewatering-staging area (33 Building). A representative sample of ash is collected. The methods referenced in R 299.9212(7) [40 CFR 261 Appendix I] are used when applicable.

Secondary Effluent

Sampling times for secondary effluent are based on retention time through the WWTP. This retention time will vary based on hydraulic load at the time that the certification program is conducted. After the specified retention time has elapsed to allow for scrubber water from the Incineration Complex to be passing through the system, samples of secondary effluent are taken on a periodic basis (typically once per hour) for the period of time corresponding to the duration of the certification burn. These samples are composited to form one sample for analysis.

Determination of Target Analyte List for Certification

The target compounds for analysis are determined from waste stream data. The target compounds are specified in R 299.9311 [40 CFR 268 Subpart D]. These analytes may include total content and Toxicity Characteristics Leaching Procedure (TCLP) analysis for volatile, semi-volatiles, inorganics, and metals.

Analysis

Samples will be analyzed by the Dow Environmental Analysis Research Laboratory and Analytical Sciences Laboratories. In some cases, the services of an outside laboratory will be engaged. All analyses performed will follow SW-846 methods or equivalent.

Interpretation of Land Disposal Restrictions Sample Results

Results of the sample analyses will be evaluated against the published treatment standards to demonstrate compliance. This procedure will compare the concentrations of constituents in the regulated waste streams to fixed treatment standards. This comparison will test a hypothesis that compares a mean to a fixed number using a t-test.

The concentrations of constituents in the regulated waste streams at the designated Points of Compliance will be compared to their treatment standards to determine if they are in compliance with the treatment standards. The comparison will use a Student's t-test at the 0.05 level of significance to determine if a statistically significant increase over the treatment standard limit has occurred.

Initially, one sample from each of the appropriate regulated waste streams will be taken and analyzed for the applicable constituents to be monitored from R 299.9311 [40 CFR 268]. If all of the constituents analyzed in all of the samples are below their respective treatment standards, then the treatment standard is not being exceeded and the sampling period is over. If, on the other hand, the concentration of a constituent in a sample is determined to be above the treatment standard, then that stream will be re-sampled four (4) consecutive times, generating four (4) different samples. These four (4) samples will each be analyzed for the constituent(s) which exceeded the treatment standard. This analysis will generate a total of five (5) analyses of the specific hazardous waste constituent(s) in the stream, and these five (5) analyses will be statistically compared to the treatment standard.

The five (5) analyses of the detected constituent will form a population of size n=5. From this population, the mean (X) and the standard deviation (s) will be calculated as follows:

$$X=1/n\Sigma x_i$$
$$s=[1/(n-1)\ \Sigma(x_i-x)^2]^{1/2}$$

where: x_i=the individual measured concentrations of the specific constituent.

When a measured concentration is below the detection level, one-half of the detection level will be used as the value x_i. Though this can cause errors in the estimation of the standard deviation and the mean, these errors should be small because the treatment standards are all above the detection limits. The data will then be used to test the null hypothesis (H_o) that "the concentration of the constituent in the waste stream is not greater than the treatment standard" verses the alternate hypothesis (H_1) that "the

concentration of the constituent in the waste stream is greater than the treatment standard."

The rejection region for the null hypothesis is set up as:

If $x < (c_j + t*s/n)$: Do not reject H_o
If $x > (c_j + t*s/n)$: Reject H_o in favor of H_1

Where c_j equals the treatment standard for hazardous waste constituent j, and t is the t-statistic with a 0.05 level of significance. For a sample size (n) of 5, and therefore 4 degrees of freedom, t = 2.132.

For situations where additional samples are taken, or fewer samples need to be compared to the concentration limit due to currently unforeseen difficulties, a list of values for the t-statistic are included below.

Land Disposal Restrictions

t-Table for Proposed t-Test Alpha = 0.05

Degrees of Freedom[1]	t Statistic
1	6.314
2	2.920
3	2.353
4	2.132
5	2.015
6	1.943
7	1.895
8	1.860
9	1.833
10	1.812
11	1.796
12	1.782
13	1.771
14	1.761
15	1.753
16	1.746
17	1.740
18	1.734
19	1.729
20	1.725
21	1.721
22	1.717
23	1.714
24	1.711
25	1.708
30	1.697
40	1.684
60	1.671
120	1.658
Infinity	1.645

[1] For the statistical test proposed in Section XVI.B, the degrees of freedom equals the sample size minus one, or d.f. = n-1.

FIGURE II.C-1

EXAMPLE GENERATOR'S WASTE CHARACTERIZATION FORM

FIGURE II.C-2 (Formerly 5-1)

LOGIC DIAGRAM FOR TREATMENT AND DISPOSAL OF HAZARDOUS WASTE

FIGURE II.C-1

EXAMPLE GENERATOR'S WASTE CHARACTERIZATION FORM

FIGURE II.C-2 (Formerly 5-1)

LOGIC DIAGRAM FOR TREATMENT AND DISPOSAL OF HAZARDOUS WASTE

Stream Code:	Profile Number:

THE DOW CHEMICAL COMPANY UNIVERSAL WASTE CHARACTERIZATION

** For help, click on the **blue** hyperlinks to be forwarded to the appropriate section of the guidance document.

A. GENERATOR INFORMATION.

1. a. Contact Name: _____ b. Dow ID # _____
   c. Contact Building #: _____ d. Telephone #: _____ e. Fax #: _____
2. Waste is from a. Plant Site/Name/OPN: _____
   b. Control Rm. Telephone #: c. Waste pick-up location:
3. DOWFAS Account # (15 digits) _____ 4. Need Date: _____

B. GENERAL INFORMATION.

1. Waste Title (80 char): _____
2. Supply the US DOT Waste Description if the waste will travel on public roads, including UN number.

   _____
3. a. Describe source of the waste. INCLUDE "where" and "how" waste was generated. STATE what happened to cause the waste, i.e. spill, process upset, tank or sump cleaning. **TX, LA.**:reference specific tank(s) and function of the tank(s) (255 char). _____
   b. Does Dow own this waste? ☐ Yes ☐ No
4. a. Anticipated frequency ☐ One-time ☐Routine b. Expected generation rate _____
   c. Quantity currently in inventory _____ d. Storage capacity: _____
5. a. Container category: ☐ Packaged ☐ Bulk
   b. Specify the type of container to be used to send waste (and the material of construction and capacity if known).

Type of Container	Material of Construction of Container	Capacity of Container

6. What is the primary Determination Method (DM) for this stream ?
   ☐ Process Knowledge ☐ Analytical, method _____ ☐ Other _____

C. RECEIVER INFORMATION.

1. Proposed location that waste will be sent to (Enter 'New' in last column if this is not an update of an existing profile):
   a. Name b. Profile Number

   _____ _____

GENERATOR/CONTACT PERSON CERTIFICATION
(MUST be a Dow Employee trained in RCRA management)

I certify that, based on process knowledge, laboratory analysis, or my inquiry of those individuals immediately responsible for obtaining this information, the information on this form is true, accurate and complete, I am aware that significant penalties (including the possibility of fine and imprisonment) may be assessed for knowingly causing the improper classification and/or disposal of wastes.

Name: (printed) _____ Master # _____

Title: _____ Bldg # _____ Telephone # _____

Signature: (original) Date: _____

Stream Code:	Profile Number:

D. WASTE COMPOSITION

(Please attach applicable Material Safety Data Sheet (MSDS) OR Toxicity Industrial Hygiene Medical and Environmental (T.I.M.E.) Sheet)

- Use specific chemical names. No initials, abbreviations, trade names, generic groups, or acronyms. List all constituents regardless of concentration.
- Specifically list metals, esp. antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, silver, and thallium, that appear in ppm levels.
- Indicate if concentrations are Process Knowledge (P) or Analytical (A) in the "P/A" column. If concentrations are analytically determined, list method on this page or in Section G "Additional Information".

1. ☐ Check here if this is a lab pack which will use a pack inventory system. Attach a list of all potential components to this characterization (can be an inventory sheet if it is comprehensive or a separate file if more convenient). Each pack, when shipped, must include a positive identification (✓) of each regulated component contained in the lab pack. Add a Lab Pack Certification Form to this packet, available in Section I. For Table A below, use the DR# for lab packs (0336-3288)

2. **Table A**: Waste components in original waste (i.e. "as generated"). List additives (like absorbent) in Table A only if they were part of the waste as the waste was originally generated. Otherwise use Table B. Note that the averages for BOTH Table A and Table B must equal 100%.. Give the TCLP concentration (with units), if known.

Component Name (including contaminants)	Identifier (DR # or CAS #)	Concentration Range with units (wt% or ppm) MIN		MAX	Average Conc. with units (wt% or ppm)	P/A	TCLP
			to				
			to				
			to				
			to				
			to				
			to				
			to				
			to				
			to				

3. **Table B**: List any materials added to the waste (such as absorbent for solidification or lime for neutralization) **not listed above**. Give concentration in material delivered for treatment/disposal (e.g. 30% absorbent means the shipment contains 70% waste defined in Table A, 30% absorbent defined in Table B).

Component Name (including contaminants)	Identifier (DR # or CAS #)	Concentration Range with units (wt% or ppm) MIN		MAX	Average Conc. with units (wt% or ppm)	P/A	TCLP
			to				
			to				

TOTAL FOR BOTH TABLE A AND TABLE B (Must be 99.5% to 100.5%) _____

(Simply add additional lines if additional space is required or use the Composition Continuation Worksheet)

D. WASTE COMPOSITION (CONTINUED)

4. **Table C**: Include any component of the waste which has a SARA/CERCLA reportable quantity in the table below. (All of these chemicals must be individually listed in Table A). For packs with variable composition, use the RCRA Waste Number RQs. For chemical and RCRA RQ's, see the Title III List of Lists.

Identifier (DR # or CAS #)	Reportable Quantity (lb)	Identifier (DR # or CAS #)	Reportable Quantity (lb)

E. PHYSICAL CHARACTERISTICS.

Supply units for all values entered. All values are for waste "as shipped" unless otherwise specified.

1. Physical state of waste as generated:
   a. ☐ Liquid ☐ Solid ☐ Solids & free liquids ☐ Gas (Bottles in packs = "Solid")
   b. Temperature assumed for Question a. _____
2. Physical state of waste as shipped
   a. ☐ Single Phase ☐ Multi-phase ☐ Absorbed/Solidified Liquid ☐ Bottles in packs
3. Specific properties. Give the average concentrations, the concentration unit, and the Determination Method (P=Process knowledge, A=Analytical). If additional analytical information is available, add it to the end of this form.

Property	Avg.	Unit	DM	Property	Avg.	Unit	DM
a. Ash (particulates)				b. Non-halogenated Organics			
c. Total Suspended Solids				d. Halogenated Organics			
e. Total Solids				f. Total Organic Carbon (TOC)			
g. Halogen Content: F				h. Halogen Content: Cl			
i. Halogen Content: Br				j. Halogen Content: I			
k. Friable Asbestos				l. Heat of Combustion			

m. PCB's (give conc. range as generated): _____

4. Additional properties required for streams sent to a WWTP. ☐ Not Applicable

Property	Daily Avg	Max	Min	Unit	DM
a. Hydraulic load					
b. Total Nitrogen					
c. Ammonia					
d. Temperature	XXXX		XXXX		
e. Discharge Pressure					
f. Alkalinity					
g. pH					
h. Salinity (TDS)					
i. BOD:TOC ratio		XXXX	XXXX		
j. COD:TOC ratio		XXXX	XXXX		

5. a. Storage Temperature requirement: ☐ Ambient ☐ Other _____
   b. Shipping Temperature requirement: ☐ Ambient ☐ Other _____
6. If material as shipped is bulk liquid or gas (answer Question 7 "N/A"): ☐ Not applicable, must answer Question 7.
   (Waste must be able to pass through appropriate mesh screen @ shipping temps: MI=18 mesh, LA=20 mesh, TX=3 mesh)
   a. Density: _____ b. Flash Point: _____ c. Boiling Point: _____
   d. Freezing Point: _____ e. Vapor Pressure: _____ @ (temperature): _____
   f. Viscosity: _____ @(temperature): _____
   g. pH: amenable to pH measurement, at least 20% water _____

E. PHYSICAL CHARACTERISTICS (CONTINUED)

h. Material of construction requirements: _____

i. Possibility of multi-phase layering, describe: _____

7. If material as shipped is a solid (with or without free liquids), liquids in a pack, or an absorbed liquid: ☐ Not applicable

a. Density _____

b. % free liquid _____ c. Flash point: _____ d. pH: _____

TX: if absorbed liquid, provide flash point and pH before absorption.

8. Reactive Chemical Properties.

a. i. Handling indicators.

Y	N		Y	N		Y	N		Y	N	
☐	☐	Flammable	☐	☐	Radioactive	☐	☐	Pyrophoric	☐	☐	Unstable
☐	☐	Water reactive	☐	☐	Acid reactive	☐	☐	Base reactive	☐	☐	Reducer
☐	☐	Heat sensitive	☐	☐	Oxidizer	☐	☐	Corrosive	☐	☐	Refractory Aggressive
☐	☐	Explosive Dust	☐	☐	Air Reactive	☐	☐	Other (Explain)			

ii. Explain any Yes answers: _____

b. i. Does the waste contain any chemical listed in the list of Shock Sensitive Wastes? Yes ☐ No ☐

ii. If "Yes," then specify: _____

c. i. Is this a waste that will decompose or polymerize with heat or pressure release at less than 200°F? Yes ☐ No ☐

ii. Explain "Yes" answer: _____

d. i. Has Reactive Chemical Testing been performed? Yes ☐ No ☐

ii. If "Yes", explain (exotherm, endotherms, shock sensitivity, etc.), also specify exotherm initiation temperature and include report, if applicable: _____

9. Safety and Exposure Hazard.

a. i. Safety and Exposure Hazard.

Y	N		Y	N		Y	N	
☐	☐	Sensitizer	☐	☐	Lachrymator	☐	☐	Acute Skin Exposure Hazard
☐	☐	Carcinogenic	☐	☐	Offensive Odor	☐	☐	Acute Vapor Exposure Hazard
☐	☐	Toxic	☐	☐	Irritant			

ii. Explain any acute hazard: _____

10. Handling and Spill Procedures.

a. Specify all that apply (not all options available at all sites):

		i. Handling	ii. Spill		i. Handling	ii. Spill
Boots –	Rubber	☐	☐	Face Shield –	☐	☐
Goggles		☐	☐	Respirator – Dust	☐	☐
Gloves	4-H	☐	☐	Half Face cart.	☐	☐
	Nitrile	☐	☐	Full Face cart.	☐	☐
	Rubber	☐	☐	SCBA	☐	☐
Suits	Encapsulated	☐	☐	Air Supply Mask	☐	☐
	Coated Paper	☐	☐	Air Supply Hood	☐	☐
	Rubber	☐	☐	iii. Cartridge Type : _____		

iv. Others _____

b. Check which of these standard absorbents should be used, and which should not be used for cleaning up spills:

	i. Use	ii. Avoid		i. Use	ii. Avoid		i. Use	ii. Avoid
Zorball	☐	☐	Sand	☐	☐	spun polypropylene	☐	☐
Clay	☐	☐	Vermiculite	☐	☐	Cellulose/Corn cob	☐	☐
Sawdust	☐	☐						

iii. Additional absorbents to **USE**: _____

iv. Additional absorbents to **AVOID**: _____

c. How is the waste handled at the manufacturing plant? List any special precautions or procedures: *(attach additional sheet if necessary)* _____

11. a. Have there been any known problems with treating this waste in the past? Yes ☐ No ☐

b. Explain "Yes" answer: _____

Stream Code:	Profile Number:

F. REQUIREMENTS UNDER US REGULATIONS

1. a. Is the waste subject to "control" under any Air Rule* listed below? (Indicate 'No' for streams subject to the rule but exempt from control and for streams that do not require control because of pretreatment within the process unit.) If Yes, check the applicable rule: Yes ☐ No ☐

*Air Rules:

- ☐ MACT Rules (HON, Epoxy, etc.) or Other Rules where the stream is classified as a Group 1 wastewater stream and thus requiring control.
- ☐ OSWRO – waste is to be sent offsite to a TSD facility for treatment with greater than 500 ppm HAPS
- ☐ Benzene Waste NESHAP - waste with greater than 10 ppm benzene
- ☐ Texas only - Reg. V Industrial Wastewater - waste with > 10,000 ppmv VOC at any flow rate or > 1000 ppm VOC at 2.64 gpm (annual avg.)
- ☐ Louisiana only - Limiting VOC Emissions from Industrial Wastewater

b. If "Yes", treatment of the stream should be combustion unless there is special consultation with a technical Air Specialist in the Regulatory Management Expertise Center. Specify any controls required by the air rule for storage and conveyance of the materials after they are transferred to Environmental Operations:

2. Is the waste regulated under any of the following US regulations?
   a. Does the waste contain any of the chemicals listed in 40CFR 68.130, the EPA's Risk Management Rule, on either the Toxic Substances or the Flammable Substances List? Yes ☐ No ☐
   If "Yes," please contact the receiving site's Waste Approver to determine if a new submission is required before the waste may be shipped.

G. OTHER APPLICABLE WASTE CHARACTERIZATION REFERENCE NUMBERS

If this waste is disposed of at another disposal site, give the reference number used at that disposal site.

Treatment Site	Reference Number	Status	Last Review Date

H. ADDITIONAL INFORMATION

Stream Code:	Profile Number:

I. APPENDED WORKSHEETS

In most cases, additional forms are needed. Answer the following questions. For any "Yes" or "Unsure" answers, you must add the appropriate form to the bottom of this waste characterization. To view the forms, click on the "view only" button corresponding to the desired form. To add a form to this characterization, double click on the "Add" button and the form will automatically be added to the end of this file.

If you need extra space for Table A in Section D, Waste Composition.

View only | Add | **Composition Continuation**

Certain State Regulations may apply. Fill out the appropriate form for your disposal state.

View only | Add | ✔ **Michigan Specific Form**

View only | Add | **Texas Specific Form**

View only | Add | **Louisiana Specific Form**

Resource Conservation and Recovery Act (RCRA) Assessment Worksheet:

a. Is the waste RCRA Hazardous? Unsure ☐ Yes ☐ No ☐

b. Is the waste RCRA non-hazardous, but one or more of the components appear on the RCRA F, U, or P lists? Unsure ☐ Yes ☐ No ☐

c. Has the waste been treated to remove a characteristic hazardous waste number (i.e. the HWN D001-D043 once applied, but no longer does)? Unsure ☐ Yes ☐ No ☐

View only | Add | ✔ **RCRA Assessment**

Land Disposal Restriction (LDR) Certification Worksheet is required for all RCRA hazardous wastes and waste residues

View only | Add | ✔ **LDR Certification Worksheet**

View only | Add | ✔ **LDR App IV Lab Pack Certification (determined by the LDR Certification Worksheet)**

View only | Add | ✔ **LDR Attachment 1 (determined by the LDR Certification Worksheet)**

View only | Add | ✔ **LDR Attachment 2 (determined by the LDR Certification Worksheet)**

Toxic Substance Control Act (TSCA) Assessment Worksheet:

Are the chemicals in the waste subject to a TSCA 5(e) Consent Order or a Significant New Use Rule (SNUR) at the concentration at which they occur in the waste? Unsure ☐ Yes ☐ No ☐

View only | Add | ✔ **TSCA Assessment**

Please add any custom forms to this packet that will help characterize this waste. To do so, type your form title on the blank below and double click on "Add Your Own" to proceed to the end of this packet.

Add Your Own | **Other:** _____

Stream Code:	Profile Number:

THE DOW CHEMICAL COMPANY UNIFIED WASTE CHARACTERIZATION
Michigan-Specific Worksheet

** For help, click on the section or list/table and you will hyperlink to the appropriate section of the guidance document or list/table.

A. STATE WASTE NUMBERS

1. MI ACT 451 PART 111 REGULATED HAZARDOUS WASTE
   a. Is the waste defined in Michigan S list? Yes ( ) No ( )
   b. Is the waste defined in Michigan K list? Yes ( ) No ( )
   c. Is the waste a discarded commercial chemical product, off-spec. species, or a container or spill residue? Yes ( ) No ( )
      i. If Yes Is the waste from a RCRA-empty container? Yes ( ) No ( )
         1. If No - is the waste listed in Michigan U List? Yes ( ) No ( )
   d. Enter all Hazardous Waste Numbers applicable from Questions A.2. a. to A.2.c.:

      _____

2. MI ACT 451 PART 121 REGULATED NON-HAZARDOUS WASTE.
   a. Is the waste non-hazardous, does it contain free-flowing liquid, AND will it be transported across any public roads or railways by a non-Dow transporter? *(answer "No" if there is at least one RCRA or MI Hazardous Waste Number)* Yes ( ) No ( )
   b. If "Yes", waste number(s) from Michigan L List must be listed: _____

B. WASTE TO WASTE WATER TREATMENT PLANT

1. List any chemical listed in Volatiles of Concern table, the lb/day discharged, and any pretreatment.

Chemical	lb/day	Pretreatment

2. List any chemical listed in Priority Pollutants Table

   _____

3. List any chemical listed in Critical Materials Table

   _____

4. List the maximum flow (with units) that will be received during any
   a. 60 minutes: _____ b. 24 hours: _____ c. One year: _____
5. Does the waste contain any chemical not previously released to the Midland WWTP? Do not know ( ) Yes ( ) No ( )

C. WASTE TO INCINERATORS

1. If packaged waste (e.g. DAK packs): requested maximum container weight (if desired/appropriate): _____
2. Incinerator Permit Requirements.
   a. Does the waste contain any chemical greater than the thresholds listed in column 4 or column 6 of Incinerator Mass Limits Table. (Assume 200 lb per pack for this question) Yes ( ) No ( )
   b. If "Yes", list below (Lab packs should list chemicals and quantities in the inventory list at the end of WC):

Chemical	Concentration (wt %)	Chemical	Concentration (wt %)

3. Provide NFPA ratings (LPP 1.5) for all *bulk* liquids: Health_____ Flammability____ Reactivity____ Special Hazards ____
   In lieu of NFPA ratings, *off site* shippers may provide Hazard Material Identification Numbers:_____
4. If an analytical method was used versus process knowledge for determination of waste constituents, provide information on the sampling method (i.e. grab sample from pump, lot composite, etc). _____

D. WASTE TO LANDFILL

1. a. Is any component of the waste restricted or banned from release to the waste water treatment plant due to aquatic toxicity or biomass inhibition? Do not know ( ) Yes ( ) No ( )
   b. If "Yes", list restictions. Include species of fish and corresponding LC50 if known:

   _____

Stream Code:	Profile Number:

THE DOW CHEMICAL COMPANY UNIVERSAL WASTE CHARACTERIZATION
RCRA Assessment Worksheet

A. RCRA LISTED HAZARDOUS WASTE.

1. Is the waste defined in the EPA's F List for RCRA "listed" hazardous wastes from non-specific sources ? Yes ☐ No ☐
2. Is the waste defined in the EPA's K list for RCRA "listed" hazardous wastes from specific sources ? Yes ☐ No ☐
3. Is the waste a discarded commercial chemical product, an off-spec. species, a container residue, or a spill residue (If 'No,' the next three questions are 'NA')? Yes ☐ No ☐
   a. Is the chemical product listed in the EPA's P List for RCRA acutely hazardous wastes? NA ☐ Yes ☐ No ☐
   b. Is the chemical product from a RCRA-empty container (If 'Yes', the next question is 'NA') ? NA ☐ Yes ☐ No ☐
      i. If No - is the chemical product listed in the EPA's U List for RCRA toxic hazardous wastes ? NA ☐ Yes ☐ No ☐
4. For any "yes" answers to questions A. 1-3, list each Hazardous Waste Number (HWN) associated with the waste.

_____

_____

5. For any waste or chemical which is on ANY of the lists in Questions A.1-3 but the associated Hazardous Waste Number does NOT apply, list the chemical and the reason the code does not apply. See the Solid Waste Expertise Center for assistance.

Waste or Chemical	Identifier (DR # or CAS #)	Reason HWN not applicable

B. RCRA CHARACTERISTIC HAZARDOUS WASTE.

1. Characteristic: **Ignitability.**
   a. Liquid flash point:
      i. Is the waste a liquid with a flash point ≤ 140 °F (≤ 60 °C) ? Yes ☐ No ☐
      (If 'No', skip questions ii. and iii. and answer question iv. 'No')
      ii. Is the waste an aqueous (> 50% H2O) solution where the flash point is due solely to alcohol and is the alcohol <24% by wt (the 'alcohol exemption')? NA ☐ Yes ☐ No ☐
      iii. Is the 'alcohol exemption' allowed in the treatment facilities' state (For MI , answer 'No'; for LA and TX, answer 'Yes'; other locations, contact the Approver) NA ☐ Yes ☐ No ☐
      iv. Is Question i. 'Yes' and either Question ii. or Question iii. 'No'? (If Question iv. = 'Yes", then 'D001' applies) Yes ☐ No ☐
   b. Is the waste a containerized compressed gas which has a pressure greater than 40 psia (25 psig) and a flash point ≤ 140 °F (≤ 60 °C)? Yes ☐ No ☐
   c. Is the waste an oxidizer as defined under DOT 49 CFR 173.151? *(e.g., chlorates, permanganates, peroxides or nitrates)?* Yes ☐ No ☐
   d. Is this a non-liquid waste which can, under standard temperature and pressure, cause fire through friction, absorption of moisture, or spontaneous chemical changes? AND is it also a waste which, once ignited, burns so vigorously and persistently that it creates a hazard? *(Answer "Yes" only if both are "Yes")* Yes ☐ No ☐
   e. Enter "D001" as the Hazardous Waste Number if any response to Section B.1. above is "Yes":
   f. If the Hazardous Waste Number "**D001**" applies, does the waste contain greater than 10% Total Organic Carbon (TOC)? NA ☐ Yes ☐ No ☐
   IF "YES", THE ORGANICS MUST BE RECOVERED, BURNED, OR POLYMERIZED!
2. Characteristic: **Corrosivity.**
   a. Is the waste an aqueous solution (≥20% water) with a pH ≤ 2.0 or ≥ 12.5? Yes ☐ No ☐
   b. Is the waste a liquid, and does it corrode steel at a rate of ≥ 0.25 inches per year? Yes ☐ No ☐
   c Enter "**D002**" as the Hazardous Waste Number if any response to Section B.2., above, is "Yes": _____

Stream Code:	Profile Number:

B. RCRA CHARACTERISTIC HAZARDOUS WASTE (continued).

3. Characteristic: **Reactivity.**
   a. Is the waste normally unstable, and does it readily undergo violent change without detonating? Yes ☐ No ☐
   b. Does the waste react violently with water, form potentially explosive mixtures with water, or if mixed with water form toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment? Yes ☐ No ☐
   c. Does the waste contain cyanide and, when exposed to pH conditions between 2.0 and 12.5, generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment? Yes ☐ No ☐
   d. Does the waste contain sulfide and, when exposed to pH conditions between 2.0 and 12.5, generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment? Yes ☐ No ☐
   e. Is the waste either a) capable of detonation or explosive reactions if subjected to a strong initiating source or if heated under confinement -- for example, nitroglycerine or trinitrotoluene (TNT). OR b) Is the waste capable of detonation or explosive reactions under standard temperature and pressure? Yes ☐ No ☐
   f Enter "**D003**" as the Hazardous Waste Number if any response to Section B.3., above, is "Yes": _____

4. Characteristic: **Toxicity**
   a. Is the Toxicity Characteristic Leachate Procedure (TCLP) concentration for any chemical greater than or equal to the concentration listed in the EPA's D list ? Yes ☐ No ☐
   b. If you answered 'Yes', list each Hazardous Waste Number: _____

5. Residues from Treating any Characteristic HWN
   a. Has the waste been treated to remove a characteristic hazardous waste number (i.e. the HWN once applied, but no longer does)? Yes ☐ No ☐
   b. If you answered 'Yes', list each characteristic HWN which no longer applies. _____

C. BAN ON INCINERATION

1. If you answer "Yes" to the following question, ban does not apply. Skip remainder of Section C.
   a. Will the Lab Pack Exemption be used? If yes, add the Lab Pack Certification to this packet, using macro at bottom of the Main Form. Skip LDR. Yes ☐ No ☐
2. If you answer "No" to any of the following questions, ban does not apply. Skip remainder of Section C.
   a. Is the waste intended for incineration? Yes ☐ No ☐
   b. Is the waste RCRA hazardous? Yes ☐ No ☐
   c. Is the waste less than 1% TOC Yes ☐ No ☐
   d. Is the waste less than 5000 BTU/Lb? Yes ☐ No ☐
   e. Does the waste carry any of the Hazardous Waste Numbers listed in the Incineration Prohibition? Yes ☐ No ☐
3. If you answer "Yes" to any of the following questions, ban does not apply. Document the applicable regulation in question C.3.d. and skip remainder of Section C.
   a. Does the waste contain any organic constituent or cyanide greater than or equal to the concentration listed in Attachment 2 of the LDR Waste Characterization Section, 'Underlying Hazardous Constituent/Universal Treatment Standards',? Yes ☐ No ☐
   b. Is any portion of the waste required to be incinerated under Federal and/or State requirements? This can be determined by reviewing the LDR Treatment Standards for any "CMBST" or "INCIN" entries. Yes ☐ No ☐
   c. Does the waste consist of organic, debris-like materials (e.g., wood, paper, plastic, or cloth) contaminated with an inorganic metal-bearing hazardous waste? Yes ☐ No ☐
   d. List the applicable regulation requiring combustion: _____
4. The waste is banned from incineration. Other disposal methods are required.

D. LAND DISPOSAL RESTRICTIONS REQUIREMENTS

1. For any waste determined to be hazardous or any waste residue from treating a hazardous waste, complete the LDR Worksheet. Return to the Main Form and add LDR to your waste characterization packet.

Stream Code:	Profile Number:

THE DOW CHEMICAL COMPANY
LDR CERTIFICATION WORKSHEET

** For help, click on the **blue** hyperlinks to be forwarded to the appropriate section of the guidance document.

Important:

- **This form must be completed for all RCRA Hazardous Wastes and hazardous waste treatment residues.**
- **Records Retention of three years from the date the waste was last disposed of.**

A. LDR OFF-SITE SHIPMENTS

1. If the waste is to be transported to an off-site facility, complete the following generator information and send the applicable LDR Worksheet Sections and Attachments with the *initial* shipment of the waste

   Name: _____ Phone _____

   Company: _____ EPA ID # _____

   Address: _____

   _____

2. The waste identified on the accompanying _____ (name of State) Hazardous Waste Manifest Number _____ : ☐ does/ ☐ does not meet the applicable LDR treatment standards.

3. The waste will be shipped to the following treatment, storage, or disposal unit or facility:

   ☐ Rotary Kiln Dow Location _____

   ☐ Permitted Storage Dow Location _____

   ☐ Landfill Dow Location _____

   ☐ Other Company **Facility Name** _____

   Location _____

   Note: Use the forms provided by the outsite company for Waste Characterization and Land Disposal Restriction documentation rather than this LDR Worksheet unless the company does not have available forms.

B. LAB PACKS

1. If the Lab Pack Exemption is to be used, complete the Lab Pack Certification form and send a copy with each shipment of waste. This applies to both on-site and off-site shipments. Other LDR sections do not need to be completed.

   To add this form to your waste characterization packet, go to the Main Form Section I and double-click the "Add" button for the "LDR App IV Lab Pack Certification"

Stream Code:	Profile Number:

C. LAND DISPOSAL RESTRICTION NOTIFICATION

This waste is subject to Land disposal Restrictions under 40 CFR 268. Attach Waste Analysis, if available.

1. This waste ☐ requires treatment to meet the LDR requirements. *Do not complete Section E.*
   ☐ meets the treatment standards or has been treated by the LDR specified technology. *(Complete Section E, LDR Certification, in addition to the other sections.)*
2. This waste meets the definition of a: ☐ Wastewater ☐ Non-wastewater.
   A wastewater is a waste that contains <1% by weight Total Suspended Solids AND <1% by weight Total Organic Carbon
3. The information applicable to this waste is identified below. Check off at least one of the applicable boxes below. If you do not know which box(es) to check, consult the Approver.

   a. ☐ The waste is not restricted because there is no land disposal (or land disposal of waste treatment residues, e.g., ash).

   b. ☐ The waste is a F001-F005 spent solvent. Complete the LDR Attachment 1 to specify the applicable constituents.

   c. ☐ The waste is F039 multi-source leachate. Complete the LDR Attachment 2 to specify the constituents present in the waste.[a]

   d. ☐ The waste is an EPA listed hazardous waste (other than F001-F005, F039) as determined in Section A.4 of the RCRA Assessment Worksheet. Copy the EPA hazardous waste numbers to Section D of this LDR worksheet.

   e. ☐ This is a RCRA hazardous wastewater that is treated in a elementary neutralization system, wastewater treatment system, is discharged through an NPDES outfall, and/or is sent to a Publicly Owned Treatment Works, which are all subject to the Clean Water Act. Subsequent to generation, the wastewater becomes exempt from further RCRA regulation because it is managed as specified at 40 CFR 261.4(a)(2). Copy the EPA hazardous waste numbers from Section A and B of the RCRA Assessment Worksheet.to Section D of this LDR worksheet.
   [This is the One-time Notice to File Pursuant to 40 CFR 268.7(a)(7)].

   f. ☐ The waste is characteristically hazardous (D001-D043) as determined in specified in Section B of the RCRA Assessment Worksheet. Copy the EPA hazardous waste numbers to Section D of this LDR worksheet. Complete the LDR Attachment 2 for the Underlying Hazardous Constituents present in the waste.[a,b] Specify any applicable Subcategories for these characteristic wastes in Section D of this LDR Worksheet. (Refer to LDR Treatment Standards Table)

   g. ☐ The waste is RCRA-hazardous debris that will be or has been treated via alternative treatment technologies. Copy the applicable EPA hazard codes (D,K,F,P,U) associated with the debris to Section D of the LDR worksheet. Attachments 1 and 2 do not need to be filled out. **Contact the Approver before checking this box.**

   h. ☐ This waste is soil contaminated with RCRA-hazardous waste for which the Alternative LDR Treatment Standards for Soil of 40 CFR 268.49 (see Soil Alternative Concentration Limits) will be used. **Contact the Approver before checking this box.** If the Alternative LDR Treatment Standards for Soil are not going to be used, then treat the contaminated soil as any other RCRA-hazardous waste.

[a] LDR Attachment 2 is not required for Freeport on-site generators who send this waste to the B-33 Rotary Kiln Incinerator. For other situations where the waste will be monitored for all constituents, there is no need to specify them. Consult the Approver if you have questions.

[b] LDR Attachment 2 is not required for the following Subcategories:

- D001 ignitable wastes that are incinerated or recovered,
- D003 reaactive cyanides or sulfides,
- D006 cadmium batteries,
- D008 lead acid batteries,
- D009 high mercury organic wastes, and
- D009 high mercury inorganic wastes.

Stream Code:	Profile Number:

D. EPA HAZARDOUS WASTE NUMBER(S) AND SUBCATEGORY IDENTIFICATION

Refer to the guidance document (use the hyperlink above) or LDR Treatment Standards Table for help in determining the applicable Subcategories.

EPA Hazardous Waste Number	Subcategory (if applicable)	EPA Hazardous Waste Number	Subcategory (if applicable)

Authorized signature: _____ Date: _____

Printed or Typed Name: _____ Title: _____

Stream Code:	Profile Number:

E. LAND DISPOSAL RESTRICTION CERTIFICATION

This section can only be completed if the waste meets the applicable LDR treatment standards or has been treated according to waste specific technology for the EPA Hazardous Waste Numbers listed in Section D (see LDR Treatment Standards Table), *and* is going directly to land disposal. **IF THE WASTE IS NOT GOING DIRECTLY TO LANDFILL, DO NOT COMPLETE THIS SECTION.** As required by 40 CFR 268.7, the following applicable certification(s) are made for this restricted waste:

1. ☐ Waste or contaminated soil which meets treatment standards without prior treatment:

I certify under penalty of law that I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR 268 Subpart D. I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

2. ☐ Waste which now meets treatment standards after treatment or has been treated by a specified technology (e.g., combustion, carbon adsorption, etc.):

I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

3. ☐ The waste is debris and was treated by a technology listed in Table I of 40 CFR 268.45. List the Alternative Treatment Method used for treating the debris _____.

Contact the Approver before checking this box.

I certify under penalty of law that the debris has been treated in accordance with the requirements of 40 CFR 268.45. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

4. ☐ Wastes that are characteristic only (D001-D043) that have been decharacterized and are to be sent to a non-hazardous landfill. **Contact the Approver before checking this box.**

I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 to remove the hazardous characteristic and that underlying hazardous constituents, as defined in 268.2(I) have been treated on-site to meet the Universal Treatment Standards. I am aware there are significant penalties for submitting false certification, including the possibility of fine and imprisonment.

Authorized signature: _____ Date: _____

Printed or Typed Name: _____ Title: _____

Stream Code:	Profile Number:

THE DOW CHEMICAL COMPANY
APPENDIX IV LAB PACK CERTIFICATION

** For help on using Lab Packs, see guidance from the Main Form, Section D.

Complete this form only if the pack contains waste having at least one RCRA Hazardous Waste Number

Name: _____ Phone _____
Company: _____ EPA ID # _____
Address: _____
_____

The waste identified on the accompanying _____ (name of State) Hazardous Waste Manifest Number _____ (off-site shipments only) is an Appendix IV lab pack containing the following EPA Hazardous waste number(s) and will be incinerated at:

☐ Rotary Kiln Dow Location _____
☐ Other Company Name and Location _____
_____

☐ This lab pack does not contain any constituents found in 40 CFR Part 268, Appendix IV

Chemical Name	EPA Hazardous Waste Number	Quantity & Units

The wastes do not meet the treatment standards specified in 268, Subpart D. The alternate lab pack treatment standards under 268.48(c) will be used. As required by 40 CFR 268.7, the following certification is made:

I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only wastes that have not been excluded under Appendix IV to 40 CFR Part 268 and that this lab pack will be sent to a combustion facility in compliance with the alternative treatment standards for lab packs at 40 CFR 268.49(c). I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

Authorized signature: _____ Date: _____
Printed or Typed Name: _____ Title: _____

THE DOW CHEMICAL COMPANY

Stream Code:	Profile Number:

LDR ATTACHMENT 1 (F-LIST)

(Mark all applicable EPA Hazardous Waste Numbers and Constituents of Concern)

EPA Hazardous Waste Number	Hazardous Waste Description	Constituents of Concern
☐ F001	Spent halogenated solvents used in degreasing and still bottoms from the recovery of these spent solvents and spent solvents mixtures.	☐ Carbon tetrachloride ☐ Methylene chloride ☐ Tetrachloroethylene ☐ 1,1,1 -Trichloroethane ☐ Trichloroethylene ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane ☐ Trichlorofluoromethane
☐ F002	Spent halogenated solvents and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	☐ Chlorobenzene ☐ o-Dichlorobenzene ☐ Methylene chloride ☐ Tetrachloroethylene ☐ 1,1,1 -Trichloroethane ☐ 1,1,2-Trichloroethane ☐ Trichloroethylene ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane ☐ Trichlorofluoromethane
☐ F003 Subcategory	Spent non- Halogenated solvents and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	☐ Acetone ☐ n-Butyl alcohol ☐ Cyclohexanone ☐ Ethyl acetate ☐ Ethyl benzene ☐ Ethyl ether ☐ Methanol ☐ Methyl isobutyl ketone ☐ Xylene
☐ F003 and /or F005 Subcategory	Spent non- halogenated solvents containing **only** one or more of the following: carbon disulfide, and cyclohexanone, and/or methanol	☐ Carbon disulfide ☐ Cyclohexanone ☐ Methanol
☐ F004	Spent non-halogenated solvents and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	☐ Cresols (m and p isomers) ☐ Nitrobenzene ☐ o-Cresol ☐ Cresol (mixed isomers)
☐ F005 Subcategory	Spent non- halogenated solvents and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	☐ Benzene ☐ Carbon disulfide ☐ 2-Ethoxyethanol ☐ Isobutanol ☐ Methyl ethyl ketone ☐ 2-Nitropropane ☐ Pyridine ☐ Toluene
☐ F005 Subcategory	Spent non- halogenated solvents : 2-Nitropropane only	☐ 2-Nitropropane
☐ F005 Subcategory	Spent non- halogenated solvents : 2-Ethoxyethanol only	☐ 2-Ethoxyethanol

Stream Code:	Profile Number:

THE DOW CHEMICAL COMPANY

LDR ATTACHMENT 2 (Underlying Hazardous Constituents / Universal Treatment Standards)

(Mark all applicable Constituents of Concern.)

Stream Code:	Profile Number:

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
I. Organic Constituents:			
☐ Acenaphthene	83-32-9	0.059	3.4
☐ Acenaphthylene	208-96-8	0.059	3.4
☐ Acetone	67-64-1	0.28	160
☐ Acetonitrile	75-05-8	5.6	38
☐ Acetophenone	96-86-2	0.010	9.7
☐ 2-Acetylaminofluorene	53-96-3	0.059	140
☐ Acrolein	107-02-8	0.29	NA
☐ Acrylamide[1]	79-06-1	19	23
☐ Acrylonitrile	107-13-1	0.24	84
☐ Aldicarb sulfone[1]	1646-88-4	0.056	0.28
☐ Aldrin	309-00-2	0.021	0.066
☐ 4-Aminobiphenyl	92-67-1	0.13	NA
☐ Aniline	62-53-3	0.81	14
☐ o-Anisidine (2-methoxyaniline)	90-04-0	0.01	0.66
☐ Anthracene	120-12-7	0.059	3.4
☐ Aramite	140-57-8	0.36	NA
☐ Barban[1]	101-27-9	0.056	1.4
☐ Bendiocarb[1]	22781-23-3	0.056	1.4
☐ Benomyl[1]	17804-35-2	0.056	1.4
☐ Benz(a)anthracene	56-55-3	0.059	3.4
☐ Benzal chloride[1]	98-87-3	0.055	6.0
☐ Benzene	71-43-2	0.14	10
☐ Benzo(b)fluoranthene (difficult to distinguish from benzo(k)fluoranthene)	205-99-2	0.11	6.8
☐ Benzo(k)fluoranthene (difficult to distinguish from benzo(b)fluoranthene)	207-08-9	0.11	6.8
☐ Benzo(g,h,i)perylene	191-24-2	0.0055	1.8
☐ Benzo(a)pyrene	50-32-8	0.061	3.4
☐ alpha-BHC	319-84-6	0.00014	0.066

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
☐ beta-BHC	319-85-7	0.00014	0.066
☐ delta-BHC	319-86-8	0.023	0.066
☐ gamma-BHC	58-89-9	0.0017	0.066
☐ Bromodichloromethane	75-27-4	0.35	15
☐ Methyl bromide (Bromomethane)	74-83-9	0.11	15
☐ 4-Bromophenyl phenyl ether	101-55-3	0.055	15
☐ n-Butyl alcohol	71-36-3	5.6	2.6
☐ Butyl benzyl phthalate	85-68-7	0.017	28
☐ Butylate[1]	2008-41-5	0.042	1.4
☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88-85-7	0.066	2.5
☐ Carbaryl[1]	63-25-2	0.006	0.14
☐ Carbenzadim[1]	10605-21-7	0.056	1.4
☐ Carbofuran[1]	1563-66-2	0.006	0.14
☐ Carbofuran phenol[1]	1563-38-8	0.056	1.4
☐ Carbon disulfide	75-15-0	3.8	4.8 mg/l TCLP
☐ Carbon tetrachloride	56-23-5	0.057	6.0
☐ Carbosulfan[1]	55285-14-8	0.028	1.4
☐ Chlordane (alpha and gamma isomers)[1]	57-74-9	0.0033	0.26
☐ p-Chloroaniline	106-47-8	0.46	16
☐ Chlorobenzene	108-90-7	0.057	6.0
☐ Chlorobenzilate	510-15-6	0.10	NA
☐ 2-Chloro-1,3-butadiene	126-99-8	0.057	0.28
☐ Chlorodibromomethane	124-48-1	0.057	15
☐ Chloroethane	75-00-3	0.27	6.0
☐ bis(2-Chloroethoxy)methane	111-91-1	0.036	7.2
☐ bis(2-Chloroethyl)ether	111-44-4	0.033	6.0
☐ 2-Chloroethyl vinyl ether[1]	110-75-8	0.062	NA
☐ Chloroform	67-66-3	0.046	6.0
☐ bis(2-Chloroisopropyl)ether	39638-32-9	0.055	7.2

Stream Code:	Profile Number:

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
☐ p-Chloro-m-cresol	59-50-7	0.018	14
☐ Chloromethane (Methyl chloride)	74-87-3	0.19	30
☐ 2-Chloronaphthalene	91-58-7	0.055	5.6
☐ 2-Chlorophenol	95-57-8	0.044	5.7
☐ 3-Chloropropylene	107-05-1	0.036	30
☐ Chrysene	218-01-9	0.059	3.4
☐ p-Cresidine	120-71-8	0.01	0.66
☐ o-Cresol	95-48-7	0.11	5.6
☐ m-Cresol (difficult to distinguish from p-cresol)	108-39-4	0.77	5.6
☐ p-Cresol (difficult to distinguish from m-cresol)	106-44-5	0.77	5.6
☐ m-Cumenyl methylcarbamate[1]	64-00-6	0.056	1.4
☐ Cyclohexanone	108-94-1	0.36	0.75 mg/l TCLP
☐ o,p'-DDD	53-19-0	0.023	0.087
☐ p,p'-DDD	72-54-8	0.023	0.087
☐ o,p'-DDE	3424-82-6	0.031	0.087
☐ p,p'-DDE	72-55-9	0.031	0.087
☐ o,p'-DDT	789-02-6	0.0039	0.087
☐ p,p'-DDT	50-29-3	0.0039	0.087
☐ Dibenz(a,h)anthracene	53-70-3	0.055	8.2
☐ Dibenz(a,e)pyrene	192-65-4	0.061	NA
☐ 1,2-Dibromo-3-chloropropane	96-12-8	0.11	15
☐ Ethylene dibromide (1,2-Dibromoethane)	106-93-4	0.028	15
☐ Dibromomethane	74-95-3	0.11	15
☐ m-Dichlorobenzene	541-73-1	0.036	6.0
☐ o-Dichlorobenzene	95-50-1	0.088	6.0
☐ p-Dichlorobenzene	106-46-7	0.090	6.0
☐ Dichlorodifluoromethane	75-71-8	0.23	7.2
☐ 1,1-Dichloroethane	75-34-3	0.059	6.0

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
☐ 1,2-Dichloroethane	107-06-2	0.21	6.0
☐ 1,1-Dichloroethylene	75-35-4	0.025	6.0
☐ trans-1,2-Dichloroethylene	156-60-5	0.054	30
☐ 2,4-Dichlorophenol	120-83-2	0.044	14
☐ 2,6-Dichlorophenol	87-65-0	0.044	14
☐ 2,4-D (2,4-Dichlorophenoxyacetic acid)	94-75-7	0.72	10
☐ 1,2-Dichloropropane	78-87-5	0.85	18
☐ cis-1,3-Dichloropropylene	10061-01-5	0.036	18
☐ trans-1,3-Dichloropropylene	10061-02-6	0.036	18
☐ Dieldrin	60-57-1	0.017	0.13
☐ Diethyl phthalate	84-66-2	0.20	28
☐ 2,4-Dimethylaniline (2,4-xylidine)	95-68-1	0.01	0.66
☐ 2,4-Dimethyl phenol	105-67-9	0.036	14
☐ Dimethyl phthalate	131-11-3	0.047	28
☐ Di-n-butyl phthalate	84-74-2	0.057	28
☐ 1,4-Dinitrobenzene	100-25-4	0.32	2.3
☐ 4,6-Dinitro-o-cresol	534-52-1	0.28	160
☐ 2,4-Dinitrophenol	51-28-5	0.12	160
☐ 2,4-Dinitrotoluene	121-14-2	0.32	140
☐ 2,6-Dinitrotoluene	606-20-2	0.55	28
☐ Di-n-octyl phthalate	117-84-0	0.017	28
☐ p-Dimethylaminoazobenzene[1]	60-11-7	0.13	NA
☐ Di-n-propylnitrosamine	621-64-7	0.40	14
☐ 1,4-Dioxane	123-91-1	12.0	170
☐ Diphenylamine (difficult to distinguish from diphenylnitrosamine)	122-39-4	0.92	13
☐ Diphenylnitrosamine (difficult to distinguish from diphenylamine)	86-30-6	0.92	13
☐ 1,2-Diphenylhydrazine	122-66-7	0.087	NA
☐ Disulfoton	298-04-4	0.017	6.2

Stream Code:	Profile Number:

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
☐ Dithiocarbamates (total) [1]	137-30-4	0.028	28
☐ Endosulfan I	939-98-8	0.023	0.066
☐ Endosulfan II	33213-65-9	0.029	0.13
☐ Endosulfan sulfate	1031-07-8	0.029	0.13
☐ Endrin	72-20-8	0.0028	0.13
☐ Endrin aldehyde	7421-93-4	0.025	0.13
☐ EPTC [1]	759-94-4	0.042	1.4
☐ Ethyl acetate	141-78-6	0.34	33
☐ Ethyl benzene	100-41-4	0.057	10
☐ Ethyl cyanide (Propanenitrile)	107-12-0	0.24	360
☐ Ethyl ether	60-29-7	0.12	160
☐ Ethyl methacrylate	97-63-2	0.14	160
☐ Ethylene oxide	75-21-8	0.12	NA
☐ bis(2-Ethylhexyl) phthalate	117-81-7	0.28	28
☐ Famphur	52-85-7	0.017	15
☐ Fluoranthene	206-44-0	0.068	3.4
☐ Fluorene	86-73-7	0.059	3.4
☐ Formetanate hydrochloride [1]	23422-53-9	0.056	1.4
☐ Heptachlor	76-44-8	0.0012	0.066
☐ Heptachlor epoxide	1024-57-3	0.016	0.066
☐ 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	35822-46-9	0.000035	0.0025
☐ 1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	67562-39-4	0.000035	0.0025
☐ 1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	55673-89-7	0.000035	0.0025
☐ Hexachlorobenzene	118-74-1	0.055	10
☐ Hexachlorobutadiene	87-68-3	0.055	5.6
☐ Hexachlorocyclopentadiene	77-47-4	0.057	2.4
☐ Hexachloroethane	67-72-1	0.055	30

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
☐ Hexachloropropylene	1888-71-7	0.035	30
☐ HxCDDs (All Hexachlorodibenzo-p-dioxins)	NA	0.000063	0.001
☐ HxCDFs (All Hexachlorodibenzofurans)	NA	0.000063	0.001
☐ Indeno (1,2,3-c,d) pyrene	193-39-5	0.0055	3.4
☐ Iodomethane	74-88-4	0.19	65
☐ Isobutyl alcohol	78-83-1	5.6	170
☐ Isodrin	465-73-6	0.021	0.066
☐ Isosafrole	120-58-1	0.081	2.6
☐ Kepone	143-50-8	0.0011	0.13
☐ Methacrylonitrile	126-98-7	0.24	84
☐ Methanol	67-56-1	5.6	0.75 mg/l TCLP
☐ Methapyrilene	91-80-5	0.081	1.5
☐ Methiocarb [1]	2032-65-7	0.056	1.4
☐ Methomyl [1]	16752-77-5	0.028	0.14
☐ Methoxychlor	72-43-5	0.25	0.18
☐ Methyl ethyl ketone	78-93-3	0.28	36
☐ Methyl isobutyl ketone	108-10-1	0.14	33
☐ Methyl methacrylate	80-62-6	0.14	160
☐ Methyl methansulfonate	66-27-3	0.018	NA
☐ Methyl parathion	298-00-0	0.014	4.6
☐ 3-Methylcholanthrene	56-49-5	0.0055	15
☐ 4,4-Methylene bis(2-chloroaniline)	101-14-4	0.50	30
☐ Methylene chloride	75-09-2	0.089	30
☐ Metolcarb [1]	1129-41-5	0.056	1.4
☐ Mexacarbate [1]	315-18-4	0.056	1.4
☐ Molinate [1]	2212-67-1	0.003	1.4
☐ Naphthalene	91-20-3	0.059	5.6
☐ 2-Naphthylamine	91-59-8	0.52	NA
☐ o-Nitroaniline [1]	88-74-4	0.27	14

Stream Code:	Profile Number:

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
p-Nitroaniline	100-01-6	0.028	28
Nitrobenzene	98-95-3	0.068	14
5-Nitro-o-toluidine	99-55-8	0.32	28
o-Nitrophenol[1]	88-75-5	0.028	13
p-Nitrophenol	100-02-7	0.12	29
N-Nitrosodiethylamine	55-18-5	0.40	28
N-Nitrosodimethylamine	62-75-9	0.40	2.3
N-Nitroso-di-n-butylamine	924-16-3	0.40	17
N-Nitrosomethylethylamine	10595-95-6	0.40	2.3
N-Nitrosomorpholine	59-89-2	0.40	2.3
N-Nitrosopiperidine	100-75-4	0.013	35
N-Nitrosopyrrolidine	930-55-2	0.013	35
1,2,3,4,6,7,8,9-Octochlorodibenzo-p-dioxin (OCDD)	3268-87-9	0.000063	0.005
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	0.000063	0.005
Oxamyl[1]	23135-22-0	0.056	0.28
Parathion	56-38-2	0.014	4.6
Total PCBs (sum of all PCB isomers, or all Aroclors)	1336-36-3	0.10	10
Pebulate[1]	1114-71-2	0.042	1.4
Pentachlorobenzene	608-93-5	0.055	10
PeCDDs (All Pentachlorodibenzo-p-dioxins)	NA	0.000063	0.001
PeCDFs (All Pentachlorodibenzofurans)	NA	0.000035	0.001
Pentachloroethane[1]	76-01-7	0.055	6.0
Pentachloronitrobenzene	82-68-8	0.055	4.8
Pentachlorophenol	87-86-5	0.089	7.4
Phenacetin	62-44-2	0.081	16
Phenanthrene	85-01-8	0.059	5.6
Phenol	108-95-2	0.039	6.2

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
1,3-Phenylenediamine	108-45-2	0.01	0.66
Phorate	298-02-2	0.021	4.6
Phthalic acid[1]	100-21-0	0.055	28
Phthalic anhydride	85-44-9	0.055	28
Physostigmine[1]	57-47-6	0.056	1.4
Physostigmine salicylate[1]	57-64-7	0.056	1.4
Promecarb[1]	2631-37-0	0.056	1.4
Pronamide	23950-58-5	0.093	1.5
Propham[1]	122-42-9	0.056	1.4
Propoxur[1]	114-26-1	0.056	1.4
Prosulfocarb[1]	52888-80-9	0.042	1.4
Pyrene	129-00-0	0.067	8.2
Pyridine	110-86-1	0.014	16
Safrole	94-59-7	0.081	22
Silvex (2,4,5-TP)	93-72-1	0.72	7.9
1,2,4,5-Tetrachlorobenzene	95-94-3	0.055	14
TCDDs (All Tetrachlorodibenzo-p-dioxins)	NA	0.000063	0.001
TCDFs (All Tetrachlorodibenzofurans)	NA	0.000063	0.001
1,1,1,2-Tetrachloroethane	630-20-6	0.057	6.0
1,1,2,2-Tetrachloroethane	79-34-6	0.057	6.0
Tetrachloroethylene	127-18-4	0.056	6.0
2,3,4,6-Tetrachlorophenol	58-90-2	0.030	7.4
Thiodicarb[1]	59669-26-0	0.019	1.4
Thiophanate-methyl[1]	23564-05-8	0.056	1.4
Toluene	108-88-3	0.080	10
Toxaphene	8001-35-2	0.0095	2.6
Triallate[1]	2303-17-5	0.042	1.4
Tribromomethane/Bromoform	75-25-2	0.63	15
1,2,4-Trichlorobenzene	120-82-1	0.055	19
1,1,1-Trichloroethane	71-55-6	0.054	6.0

Stream Code:	Profile Number:

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
☐ 1,1,2-Trichloroethane	79-00-5	0.054	6.0
☐ Trichloroethylene	79-01-6	0.054	6.0
☐ Trichloromonofluoromethane	75-69-4	0.020	30
☐ 2,4,5-Trichlorophenol	95-95-4	0.18	7.4
☐ 2,4,6-Trichlorophenol	88-06-2	0.035	7.4
☐ 2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	93-76-5	0.72	7.9
☐ 1,2,3-Trichloropropane	96-18-4	0.85	30
☐ 1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.057	30
☐ Triethylamine[1]	101-44-8	0.081	1.5
☐ tris-(2,3-Dibromopropyl)phosphate	126-72-7	0.11	0.10
☐ Vernolate[1]	1929-77-7	0.042	1.4
☐ Vinyl chloride	75-01-4	0.27	6.0
☐ Xylenes-mixed isomers (sum of o-,m-, and p-xylene concentrations)	1330-20-7	0.32	30

Stream Code:	Profile Number:

Please note on the last page of this attachment that there are two sets of UTS limits for metals.

- Column 4 is to be used for waste being disposed of in states that have not adopted the revised UTS metals limits.
- Column 5 can be used in states that have adopted these new metals standards. These staes include Texas, Michigan, and Louisiana.

More information on the metals LDR limites is provided in http://ehs.intranet.dow.com/rmec/GuidanceLinks/solidwaste.htm - Regional

II. Inorganic Constituents:	CAS Number	Wastewater Standard in mg/L	Non-Wastewater Standard for States that have not adopted LDR changes	Non-Wastewater Standard for States that have adopted LDR changes
☐ Antimony	7440-36-0	1.9	2.1 mg/l TCLP	1.15 mg/l TCLP
☐ Arsenic	7440-38-2	1.4	5.0 mg/l TCLP	5.0 mg/l TCLP
☐ Barium	7440-39-3	1.2	7.6 mg/l TCLP	21 mg/l TCLP
☐ Beryllium	7440-41-7	0.82	0.014 mg/l TCLP	1.22 mg/l TCLP
☐ Cadmium	7440-43-9	0.69	0.11 mg/l TCLP	0.11 mg/l TCLP
☐ Chromium (Total)	7440-47-3	2.77	0.6 mg/l TCLP	0.6 mg/l TCLP
☐ Cyanides (Total)	57-12-5	1.2	590 mg/l	590 mg/l
☐ Cyanides (Amenable)	57-12-5	0.86	30mg/l	30 mg/l
☐ Fluoride [2]	16984-48-8	35	NA	NA
☐ Lead	7439-92-1	0.69	0.37 mg/l TCLP	0.75 mg/l TCLP
☐ Mercury--Nonwastewater from Retort[1]	7439-97-6	NA	0.20 mg/l TCLP	0.20 mg/l TCLP
☐ Mercury--All Others	7439-97-6	0.15	0.025 mg/l TCLP	0.025 mg/l TCLP
☐ Nickel	7440-02-0	3.98	5.0 mg/l TCLP	11 mg/l TCLP
☐ Selenium[2]	7782-49-2	0.82	0.16 mg/l TCLP	5.7 mg/l TCLP
☐ Silver	7440-22-4	0.43	0.14 mg/l TCLP	0.14 mg/l TCLP
☐ Sulfide[2]	8496-25-8	14	NA	NA
☐ Thallium	7440-28-0	1.4	0.078 mg/l TCLP	0.2 mg/l TCLP
☐ Vanadium[2]	7440-62-2	4.3	0.23 mg/l TCLP	1.6 mg/l TCLP
☐ Zinc[3]	7440-66-6	2.61	4.3 mg/l TCLP	4.3 mg/l TCLP

[1] Not applicable to F039 wastes
[2] Not an underlying hazardous constituent. Only applicable to F039 wastes
[3] Not an underlying hazardous constituent.

Stream Code:	Profile Number:

THE DOW CHEMICAL COMPANY UNIVERSAL WASTE CHARACTERIZATION
TOXIC SUBSTANCES CONTROL ACT (TSCA) WASTE.

NOTE: A TSCA 5(e) Consent Order or a Significant New Use Rule (SNUR) exists for certain chemicals that have gone through the TSCA Pre-Manufacturing Notification (PMN) process; the chemical is allowed to be commercialized only under the conditions set forth in the TSCA 5(e) Consent Order or SNUR. Not all PMN chemicals have TSCA 5(e) orders; only a few do *(e.g., many substituted pyridines).* If you are unsure if a component of the waste is regulated by a TSCA 5(e) Consent Order or a TSCA SNUR, then contact your EHS Operations Leader, your EHS Product Leader, or the North American Regulatory Management Expertise Center (TSCA).

A. 1. Are chemicals in the waste subject to a TSCA 5(e) Consent Order or a Significant New Use Rule (SNUR) at the concentration at which they occur in the waste? Yes ☐ No ☐

If you answered "No," then skip the remainder of the questions.

2. Does the order require specific training, with documentation, for employees potentially exposed and/or special personal protective equipment (PPE)? Yes ☐ No ☐

   i. If "Yes", list the PMN number and attach the required TSCA 5(e) training and PPE specifications to this characterization.
   PMN # _____

   NOTE: If this is a waste water characterization, answer "No" if training/PPE is not required for the concentrations seen at the wastewater treatment plant inlet.

3. Is there is a limitation on the amount of waste which can be sent to the Treatment Facility? Yes ☐ No ☐

   i. If "Yes", give details of the limitation and how the plant intends to comply.

   _____
   _____
   _____
   _____

4. Please ensure all packaged waste is labeled with TSCA 5(e) / SNUR special instructions.